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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/667,770

09/22/2003

Shinji Hamada

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JORDAN AND HAMBURG LLP
122 EAST 42ND STREET
SUITE 4000
NEW YORK, NY 10168

EXAMINER

ECHELMAYER, ALIX ELIZABETH

ART UNIT

PAPER NUMBER

1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/23/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/667,770

Applicant(s)

HAMADA ET AL.

Examiner

Alix Elizabeth Echelmeyer

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed December 5, 2006. Claims 1, 2, 6, 8 and 11 have been amended. Claims 13-16 have been added. Claims 1-16 are pending and are rejected finally for the reasons given below.

Claim Objections

2. Claim 3 objected to because it is said to be currently amended but no amendment is seen in the claim.
3. The objection to claim 12 is withdrawn. Since claim 12 was not treated on its merits in the previous Office Action, this action is non-final.

Claim Rejections - 35 USC § 112

4. The rejection of claim 8 is withdrawn in light of the amendment.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 8 and 13-16 are rejected under 35 U.S.C. 103(a) as being obvious over Ikoma et al. (US Patent 5,663,007).

Ikoma et al. teach the use of a cylindrical or rectangular casing for a sealed storage battery (column 1 lines 23-30). Ikoma et al. further teach projecting ridges on the longer side faces of the case (Figure 1).

Regarding claims 1 and 13, Ikoma et al. fail to teach the projecting ridges extending all the way to the top of the case where the opening is found. It would have been an obvious matter of design choice to extend the ridges to the opening, for example in order to facilitate production of the battery. Extending the ribs, instead of having to include a further step to ensure that the ribs do not extend all the way to the opening, would make the formation of the case simpler. Also, having the ridges extend to the opening would allow the assembler to match the ridges in the case to the ridges in the lid, ensuring that the lid and the case are lined up properly. MPEP 2144.04

Regarding claim 8, the ribs of Ikoma et al. would inherently have the properties required in the claim, since they meet all the limitations of claim 1.

As for claim 14, it can be seen in Figure 1 that the ridges of Ikoma et al. are discontinuous between the end face and the opposite end (2).

Regarding claim 15, Ikoma et al. fail to teach that the ridges have a trapezoidal cross-shape. It would have been obvious to one having ordinary skill in the art at the time of the invention to use a trapezoidal rib, for example if the ribs might fit together better since ribs of one cell could be given complementary angles to another. Such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV B)

Concerning claim 16, a sealing plate would inherently include ridges to match those of the sealing plate, obvious over Ikoma et al. as discussed above, since if it did not have matching ridges it would not meet the edges of the case and therefore not perform its sealing function.

7. Claims 5, 10, 11 (as dependent on claim 5) and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikoma et al. in view of Asahina et al. (US Pre-Grant Publication 2003/0027040).

The teachings of Ikoma et al. as discussed above are incorporated herein.

Ikoma teaches the limitations of claim 1 but fails to teach that the cells have an electrode projection on the bottom plate.

Asahina et al. teach one electrode at the top of each cell and another at the bottom. This allows for directly joining the connection protrusions, which leads to lower internal resistance and greater output ([0014]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to put electrodes at both the top and bottom of each cell so that they could be directly joined and the system would have lower internal resistance and greater output.

As for claim 10, Asahina teaches that the attachment of the battery cells in an end-to-end fashion. Asahina further teaches a gap between the cells when they are connected ([0050]). This gap allows for space for U-shaped members to be placed between the cells in order to ensure better sealing.

It would be desirable to leave space between the cells as taught by Asahina et al. because the space could be used for members to be employed to ensure good sealing.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to leave space between the cells in order to allow room for additional parts that would ensure good sealing of the lid or bottom to the casing.

Regarding claim 12, Asahina et al. teach an insulating coating on the inner surface of the battery case that secures high cooling capacity, which efficiently restrains temperature increases ([0066]).

It would be desirable to use insulation inside the battery case, either on the walls or on the ends, in order to secure high cooling capacity, thus efficiently restrains temperature increases.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use insulation inside the battery case, either on the walls or on the ends, in order to secure high cooling capacity, thus efficiently restrains temperature increases.

8. Claims 2, 3, 4, 6, 7, 9 and 11 (as dependent on 7) are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikoma et al. in view of Asahina et al. and Masuda et al. (US Patent Number 4,65,932).

The teachings of Ikoma et al. and Asahina et al. as discussed above are incorporated herein.

Regarding claims 2 and 6, Ikoma et al. fails to teach the laminated electrode plate assembly such that substrates of the positive and negative electrode plates touch the sides of the battery casing and that there is a gasket between the bottom of the case and the edges of the plates.

Asahina et al. teach the case is joined to the collectors of the electrode plate assembly ([0015], [0017]).

It would be desirable to attach the electrode assembly to the case in order to ensure that the assembly does not shift, especially if the battery was for use in a portable device.

Ikoma et al. in view of Asahina et al. fail to teach a gasket at the bottom edge of the plates.

Masuda et al. teach in insulating gasket between the casing and the plates (Figure, column 6 lines 8-18).

It would be desirable to use a gasket to insulate the plates in order to retain the heat of the reaction to maintain the efficiency of the battery.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to attach the substrates of the plates to the sides of the casing as taught by Asahina et al. and to use a gasket between the edge of the plates and the bottom of the case as taught by Masuda et al. in order to ensure that the electrode plate assembly does not shift and to insulate the assembly.

With further regard to claim 6, Asahina et al. teach that the current collector plates have connection projections that are sealed to the case and extend beyond it (abstract).

Regarding claim 3, Masuda et al. teach a flange in the sealing plate that is attached to the gasket from claim 2. The sealing part of the case comes up and around the flange (Figure).

Regarding claim 4, Ikoma et al. teach that the projecting ridges are discontinued by the opening of the case (Figure 1).

As for claims 7 and 11, Asahina et al. teach one electrode at the top of each cell and another at the bottom. This allows for directly joining the connection protrusions, which leads to lower internal resistance and greater output ([0014]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to put electrodes at both the top and bottom of each cell so that the could be directly joined and the system would have lower internal resistance and greater output.

As for claim 9, Ikoma et al. teach that the lid is welded to the case (abstract). Ikoma et al. further teach that the ribs of the lid correspond to the ribs on the casing (column 5 lines 9-11).

It would be desirable to make the ribs extend continuously from the casing to the lid because it might allow for better cooling in the battery of Ikoma et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to extend the ribs on the case of Ikoma et al. to meet the ribs of the lid in order to provide better cooling.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being obvious over Ikoma et al. in view of Morishita et al. (US Patent Number 5,747,186).

Ikoma et al. teach the ribs on the casing of the battery but fail to teach that they will withstand certain operating pressures in the battery.

Morishita et al. teach that the batteries experience a high-pressure state during charging and discharging (column 1 lines 54-56). Morishita et al. further teach that the battery having this type of casing can withstand certain pressures (column 6 lines 56-65).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to ensure that the battery could withstand certain pressures associated with charging and discharging in order to ensure the safe operation of the battery.

Response to Arguments

10. Applicant's arguments filed December 5, 2006 have been fully considered but they are not persuasive.

Applicants argue that Ikoma et al. fail to teach the ridges projecting to the end of the case. Claim 1, before amendment, did not require that the ridge extend in that manner. The amended claim has been addressed above.

Applicants argue on pages 12-13 of the Remarks that Ikoma et al. teach away from stacking the cells end to end. The examiner disagrees. While Ikoma et al. teach stacking the cells side to side so that the ribs abut one another, Ikoma et al. do not teach that the cells could not be stacked end to end. The end-to-end stacks of cells could be stacked side to side, so that the ribs of the columns of cells would abut one another.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SUSY TSANG-FOSTER
PRIMARY EXAMINER

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1745